92F4

United States Department of the Interior
Fish and Wildlife Service

Fishery Leaflet 61

LIBRARY
FISH & WILDLIFE SERVICE
PACIFIC OCEANIC FISHERY
INVESTIGATIONS

Chicago 54, Ill. * June 1944

CAPTURE AND MARKETING OF GARFISH (WITH SPECIAL REFERENCE TO THOSE OF LOUISIANA) AND RECIPES FOR THEIR PREPARATION

Prepared in the Division of Fishery Industries

In general, the fresh-water gars, or gar pikes, inhabit waters in the Great Lakes and Mississippi valley areas and the brackish bay-waters coastwise from New Hampshire to Texas. These cylindrical, voracious fishes, with their strong armature of smooth, overlapping, plate-like scales, are relics of a long-past era in piscine evolution. Dark grayish above and silver beneath, they attain lengths up to 12 feet, have a long jaw arrayed with formidable teeth, and a snout, measured from the eye, usually twice the full length of the head. 1/

In northern waters, the gars - also called billfish, billy, or bony gar - frequent the river systems, small lakes, and bayous connecting with the Upper Mississippi, and reach maximum lengths of about six feet. Those that flourish in the fresh waters of the lower Mississippi valley are known also as diamond fish (from the rhomboid shape of their scales), devilfish, jackfish, and garjack. Some, reaching lengths of nine to twelve feet, are often mistaken for floating logs as they drowse at the surface of the water.

Capable of breathing both through swim bladder and gills, the gars frequent stagnant or muddy pools where their breathing movements attract attention on warm afternoons. The swimming bladder is apparently an accessory breathing organ providing part of the oxygen required on hot days. During the summer months these fishes may be seen in large numbers, in almost any pool that they are known to frequent. They rise to the surface and, gulping for air with their long bills open, make a noise similar to the bursting of a small balloon.

Three of the nine species of gars known in North America have been found in Louisiana: the long-nosed gar, or billfish, Lepisosteus osseus; the short-nosed or duckbill gar, L. platostomus; and the Mississippi alligator gar, L. spatula.

Of these, the billfish are probably the most numerous. Though confining their activities principally to fresh water, they may occasionally enter brackish areas. The short-nosed gar greatly resembles the alligator gar, but appears to confine its activities almost entirely to fresh water. The alligator gar, on the other hand, is known to pass readily to and from fresh and salt water.

1/ In general, information is from Fishes of Middle and North America. By David Starr Jordan and Barton Warren Evermann. Smithsonian Institution, United States National Museum, Bulletin 47 (1896). Out of print.

This last named species, largest of the garfishes, may attain a length of 12 feet and a weight of 400 pounds. It is able to survive in polluted waters longer than most other species of fishes. Well armored, its bony mouth defies a hook, and its sharp teeth wreak havoc on fishermen's nets and lines; hence it is considered a pest by Louisiana commercial fishermen.

Several methods for the capture of gars are used in Louisiana. If these were applied with sufficient energy, the gar populations could probably be greatly reduced and, at the same time, an appreciable supply of protein would be added to the nation's food supply. Some of gar catching devices include the wire snare, garfish-trap with a gamefish escape, the common haul seine, and the conventional hook and line.

The first method is probably the oldest. It involves the use of an ordinary cane fishing-pole and line with a piano wire fashioned into a loop at the end in place of a hook, with the bait fixed in the center of the snare by a drop wire. When the gar attempts to get the bait, it thrusts its open bill through the loop and when this is tightened, the gar's sharp teeth provide the necessary obstruction to prevent the loop from slipping off, and the fish can then be pulled to the shore or boat and killed. The snare is easy to operate and inexpensive, requiring only a short length of piano wire, a cane pole, and 10 feet of fishing line. This is probably the device most widely used at present, and has caught sufficient fish for the local markets.

Although not yet widely used, the second method or trap developed by a commercial fisherman offers excellent possibilities. The gar's powerful armor, which protects it against most of its enemies, makes the trap workable. It has been described by Dr. James Nelson Gowanloch, Chief Biologist, Louisiana Department of Conservation, writing in the Louisiana Conservation Review, Autumn, 1939, as follows:

"The principle involved is extremely simple," he says, "consisting essentially of an outlet constructed of a wooden framework with the inner face of the escape laced with netting. The sides are open, the innermost face of the escape being attached along all its edges to the gear, either to the seine at spaced intervals or to the end of the usual double-funneled hoop trap. The method of the actual gar capture is extremely simple. A gar approaching the escape attempts to pass through; and, because of its greater body rigidity cannot make the turn, remaining therefore captured in either the seine or, if so used, in the anterior chamber of the hoop net."

The net provides for the escape of the gamefish so that there is no destruction of either of these or other small food fish.

In operation the trap appears as an outlet through which the fish can pass but it has an obstruction so closely attached in front that the garfish is unable to turn its long stiff body to leave. Five vertical bars form the foundation for both the front and rear of the escape, and its seven horizontal bars prevent the fish from going out at an angle. Since the funnel in the innermost chamber prevents its exit, it is thus trapped. The small bars extending horizontally across this opening prevent the gar from going out at an angle, and also provide

extra sturdiness. It is knitted directly into the net, and the ends of the twine provide the ties around the escape. Gamefish or commercial fish coming into contact with this escape are able to bend to either side and escape, while garfish are held within.

The trap is set with the mouth facing upstream so that fish coming downstream will come in contact with the wings, follow them to the mouth, and enter. When they have gone past the first chamber, there is no escape for them. By setting the trap with the mouth upstream, it is kept stretched by the water current. It may, however, be set in the opposite direction provided it is well staked. The tie rope at the rear also tends to keep the net stretched.

The seining of gars has proved successful on the lower Atachafalya River where fishermen were engaged in the normal operation of commercial seining. Apparently no large-scale fishing exclusively for gar has been tried here, although it is reported that, on numerous occasions, near Morgan City, as much as 75,000 pounds of gar have been taken in one week incidental to normal operations.

Ordinary hook-and-line fishing accounts for a considerable poundage of garfish caught in the vicinity of Krotz Springs. The possibilities for mass elimination of gars by this method are, of course, limited, and the cost relatively high. Most of these fish are marketed, for use either by the local residents or those of nearby towns.

Garfish are currently being marketed for food in ever-increasing quantities. The principal markets are New Orleans, Napoleonville, Eunice, Opelousas, New Iberia, and Crowley, and hundreds of pounds are now being shipped out of the State. These shipments consist exclusively of parchment-wrapped fillets, steaks, and other portions of the fish, in the fresh form. From Grand Isle, garfish are shipped to the New Orleans French Market and sold fresh or frozen, in portions of one pound or more, skinned and dressed, and in the round. The bulk of this fish is eaten fried.

Production of garfish for the French Market has increased remarkably over that of past years. In 1941, the total production reported for the French Market was 10,365 pounds; for 1942, 12,370; and for 1943, 54,920 pounds. Prices for the dressed meat ranged from 8 to 13 cents a pound on the wholesale market; in the round, it brought from 3 to 6 cents.

Large quantities of this fish, smoked, go to Napoleonville. Portions placed between two slices of French bread, forming a sort of smoked-fish sandwich, are reported to be very palatable. The Louisiana French also make a dish called "tasso", a gumbo with smoked garfish as the basic meat. Some garfish was canned in 1943 by one firm in Louisiana, and some also has been purchased by the Food Distribution Administration.

Because of its hard-scale surface, the gar must be dressed differently from other fishes when prepared for market. As it cannot easily be filleted, steaked, or dressed by the average homemaker, the garfish is not generally sold in the round.

The following method for dressing gar is recommended. With a machete or hatchet, chop off the head directly behind the pectoral fins, and immediately

drain and wash out any blood that is present. With the same instrument, chop off the tail in front of the dorsal and anal fins. Grasp the fish at the forward end with the belly side toward you. Use a sharp knife or a pair of shears and cut through the belly skin from one end to the other. Remove the viscera and wash away all blood. Hold the fish on its back so that the right side is nearest to you. With the sharp knife, separate the flesh from the skin, cutting from left to right, or from head to tail. Turn the fish around and repeat this operation on the left side. When this is completed, hold the fish on its back, start at the head end, and free the flesh from the skin where it is attached along the back. This is best accomplished by holding the blade of the knife flat and sliding it along the skin.

The flesh and bones of the fish are now free from the skin. The fish may be filleted by inserting the point of the knife along the backbone and drawing it from head end to tail end. The flesh is then separated from the rib bones of this side. Repeat the operation on the other side of the backbone. The skinned fillets thus obtained are approximately 40 percent of the weight of the round gar.

In our laboratory cooking experiments, the gars dressed ranged in weight from 1 to 9 pounds. For commercial use the fish should weigh no less than 5 pounds in the round. The yield in edible meat obtained from those weighing less than 5 pounds, based on the labor required, would make it unprofitable to market smaller fish. When the round weight is 10 pounds or more, the garfish may be cut into steaks. It may also be cut into serving-size portions, or left whole for baking after the skin has been removed.

The following seven recipes for preparing garfish for the table have been tried and tested in the Service's laboratory kitchens. For the most part, they are based upon local, favorite cooking methods for the fish, and are adapted to a wartime economy for general use. Garfish from either northern or southern waters may be used in the recipes, each of which calls for ingredients to serve six portions.

GAR CUTLETS

2 pounds gar fillets
3/4 cup all-purpose flour
1 teaspoon salt
1/4 teaspoon pepper
3 tablespoons fat

Wipe the fillets with a damp cloth and dry them. Roll fillets in the combined flour, salt, and pepper. Melt the fat in a skillet and fry the fillets about 10 minutes in the hot fat or until they are a golden brown on all sides.

ROAST GAR

2-1/2 pounds skinned, dressed gar
1 clove of garlic or 1 small onion
3/4 teaspoon salt
1/4 teaspoon pepper
2 small slices fat salt pork

Wipe the fish with a damp cloth and cut the garlic or onion into a dozen or more small pieces. Using a sharp knife, make several small slits over the surface of the fish, and in each place a section of the garlic or onion. Season the gar with the salt and pepper, and place in a shallow, greased baking pan. If the fish is too long for the pan, cut it in half and place the pieces side by side in the pan

Cut the salt pork in strips, a half-inch wide, and lay over the fish. Roast in a 375° F. oven for 1 hour. Gravy may be made from the drippings in the pan if desired.

To use any left-over roast gar, flake the fish and follow directions for Garburgers, omitting the onion, and adding 2 tablespoons of sifted, dry bread crumbs and 3 tablespoons of milk.

STUFFED GAR FILLETS

2 pounds gar fillets
1 teaspoon salt
1/4 teaspoon pepper
1 tablespoon fat
Paprika

Stuffing

2 cups soft bread crumbs
6 tablespoons finely chopped salt pork
2 tablespoons diced onion
1 tablespoon chopped parsley
1/4 teaspoon grated lemon rind
1/8 teaspoon thyme
Pinch of nutmeg
1/8 teaspoon pepper
1 egg well-beaten
2 tablespoons milk

Brown the salt pork and onion together. Add the rest of the stuffing ingredients and blend well.

Wipe the fillets with a damp cloth and season them with the salt and pepper. Place half the fillets in the bottom of a greased, shallow baking pan and cover with the stuffing; then add the remainder of the fillets. Dot the top layer of fillets with the fat, and sprinkle generously with paprika. Bake for 35 to 40 minutes at 375° F.

BROWNED GAR STEW

1-1/2 pounds gar fillets
3/4 cup all-purpose flour
1 teaspoon salt
1/4 teaspoon pepper
3 tablespoons butter or fortified margarine
3 tablespoons vegetable shortening
6 small onions
6 small potatoes
6 small carrots
3 cups hot water
3/4 teaspoon salt

Wipe the fillets with a damp cloth and roll in the combined flour, salt, and pepper. Melt half the butter or fortified margarine and the vegetable shortening in a frying pan, and brown the gar fillets on both sides. Boil the onions, potatoes, and carrots in the hot water seasoned with the salt in a covered pan until soft. Drain, saving the water that the vegetables were cooked in. Roll the carrots and onions in the remaining seasoned flour, and brown slightly in the remainder of the butter or fortified margarine and vegetable shortening. Combine the browned fish, carrots, onions, and the boiled potatoes and put in a large casserole. Rinse out the frying pan in which the fish, carrots, and onions were browned with the liquid saved from the vegetables, and pour over all the ingredients in the casserole. Cover and bake in a 375° F. oven for 45 minutes.

GARFISH BOILED IN COURT BOUILLON

2 pounds gar fillets
1 carrot, sliced lengthwise
1 tablespoon diced onion
2 slices green pepper
2 tablespoons butter or fortified margarine
1 bay leaf
4 whole black peppers
3 sprigs parsley
3 slices lemon
1 tablespoon salt
1 quart hot water

Melt the butter or fortified margarine in a skillet, and saute the carrot, onion, and green pepper until the onion is golden brown and the green pepper is soft. Add the other ingredients, cover, and bring to a boil. Add the fish, cover, and simmer for 20 minutes. Drain, saving the stock, and cool. Flake the fish and use in Garburgers or Cream of Gar Soup.

CREAM OF GAR SOUP

1-1/4 cups cooked flaked gar
2 tablespoons butter or fortified margarine
4 tablespoons all-purpose flour
1/2 teaspoon salt
1/8 teaspoon pepper
1/8 teaspoon paprika
2 cups milk
2 cups fish stock (saved from Garfish Boiled in Court Bouillon)
1/2 cup diced, cooked carrots

Melt the butter or fortified margarine and blend in the flour, salt, pepper, and paprika. Gradually add the milk and fish stock and cook until slightly thick, stirring constantly. Add the flaked gar and carrots and bring to the boiling point. Serve hot.

GARBURGERS

3 cups boiled flaked gar
2 tablespoons grated onion
2 tablespoons chopped parsley
1 egg, well-beaten
3 tablespoons milk
3/4 teaspoon salt
1/4 teaspoon pepper
1/2 cup sifted dry bread crumbs
3 - 4 tablespoons fat, melted

Combine the first seven ingredients, blend well, and shape into cakes. Roll the cakes in the bread crumbs and fry in the melted fat on both sides about 8 minutes, or until golden brown.

4-676